

ABSTRACT

A gasification furnace and a combustion furnace are integrated with each other to form a single fluidized-bed gasification and combustion furnace in which unburned char generated in the gasification furnace is combusted in the combustion furnace, and the thus generated heat of combustion is utilized as a heat source for gasification. The fluidized-bed gasification and combustion furnace (1) comprises a gasification furnace (3) and a combustion furnace (4) which are divided by a first partition wall (2). In the gasification furnace (3), a revolving flow of the fluidized medium is formed by diffusion devices (32, 33) provided on furnace bottoms, and an upward flow of the fluidized medium partly flows in the combustion furnace (4). The combustion furnace (4) is divided into a main partition wall (5). In the main combustion chamber (6), a revolving flow of the fluidized medium is formed by diffusion devices (34, 35) provided on furnace bottoms, and an upward flow of the fluidized medium partly flows in the heat recovery chamber (7).